

AMENDMENTS TO THE CLAIMS

Please amend the present application as follows:

CLAIMS

1. (Currently amended) A system for measuring a distance between materials using a light source, the system comprising:
a first optical material having a first surface and an opposing second surface;
a second material having a third surface and an opposing fourth surface, the third
surface of the second material being separated from the second surface of the first material by
a gap; and
a distance-measurement-offset slot disposed in the first optical material and extending
into the first optical material from the second surface of the first optical material, the slot
defined in part by a slot surface, such that light transmitted by the light source generates a
first reflection from the first surface, a second reflection from the slot surface, a third
reflection from the third surface, and wherein the reflections provide distance information
between the three surfaces, such that a slot surface is formed on the first material, the distance
between the surface of the first material and the slot surface being a precisely known distance,
such that when a cavity distance is measured between the surface of the second material and
the slot surface, a gap distance is determined by subtracting the precisely known distance from
the cavity distance.
2. (Currently amended) The system of claim 1, further comprising a second distance-
measurement-offset slot disposed in the second optical material and extending into the second
optical material from the third surface of the second optical material, the second distance-
measurement-offset slot defined in part by a second slot surface, such that light transmitted
by the light source generates a fourth reflection from the second slot surface, such that a
second slot surface is formed on the second material, the distance between the surface of the
second material and the second slot surface being a precisely known second distance, such
that when a cavity distance is measured between the slot surface and the second slot surface,
the gap distance is determined by subtracting the precisely known distance and the precisely
known second distance from the cavity distance.
3. (Currently amended) A method for measuring distance between two optical
materials, the method comprising the steps of:

using a distance-measurement-offset slot disposed in at least one of the two optical materials, the slot in part defined by a partially reflecting surface that produces a reflection
measuring distance between a slot surface formed by a slot in a first material and a surface on
a second material, the first material having a surface such that the distance between the slot
surface and the surface of the first material is a precisely known distance; and
subtracting from the measured distance the precisely known distance to determine the
distance between the first material and the second material.

4. (Currently amended) The method of claim 3, further comprising the step of measuring a depth of the distance-measurement-offset slot, the precisely known distance
between the slot surface and the surface of the first material, the step of measuring the
precisely known distance completed before the step of measuring distance between the slot
surface formed by the slot in the first material and the surface on the second material.

5. (Currently amended) The method of claim 3 4, further comprising the step of measuring a the precisely known distance between the slot surface and the surface of the first
material, the step of measuring the precisely known distance concurrently with the step of
measuring distance between the slot surface formed by the slot in the first material and the a
surface of the second material.

6. (Currently amended) The method of claim 3, further comprising the steps of:
transmitting a light through the first material and the distance-measurement-offset
slot, and onto the a surface of the second material; and
detecting a first reflected light from the slot surface of the distance-measurement-
offset slot and a second reflected light from the surface of the second material such that the
measured distance is determined.

7 - 19. (Cancelled)

20. (New) The system of claim 1 wherein the second material is a second optical material.

21. (New) The method of claim 3, further comprising:
using a second distance-measurement-offset slot disposed in the other of the at least one of two optical materials.

22. (New) The method of claim 3, wherein the step of using the distance-measurement-offset slot comprises:
measuring a depth of the distance-measurement-offset slot;
providing an incident light upon a first surface of the at least one of two optical materials;
transmitting the light through the at least one of two optical materials and the distance-measurement-offset slot, wherein the light is then incident on a second surface of the other of the at least one of two optical materials;
receiving a first reflected light from the slot surface;
calculating a first distance using the first reflected light;
receiving a second reflected light from the second surface;
calculating a second distance using the second reflected light;
calculating the distance between the first and second materials using the first distance, the second distance, and the depth of the distance-measurement-offset slot.

23. (New) The method of claim 22, wherein calculating the distance between the first and second materials comprises a subtraction of the depth measurement of the distance-measurement-offset slot from the second distance.

24. (New) The method of claim 22 further comprising:
using the calculated distance to reiteratively re-position one of the two materials to obtain a desired distance between the two materials.

25. (New) An optical measurement system comprising a distance-measurement-offset recess disposed in a first optical material, the distance-measurement-offset recess located in an optical measurement transmission path to provide a distance information between at least two reflecting surfaces, the distance information including a distance offset corresponding to a depth of the recess.

26. (New) The optical measurement system of claim 25, further comprising:
a multi-layer material comprising the first optical material, wherein the first optical material has a first surface and an opposing second surface, the recess is disposed from the second surface of the first optical material towards the first surface of the first optical material, the recess having a depth dimension less than the thickness of the first optical material, the recess having a partially reflective surface; and
a second material having a third surface substantially parallel to the second surface of the first optical material.

27. (New) The system of claim 26 wherein the second material is a second optical material.

28. (New) The system of claim 27 further comprising a second recess disposed in the second optical material, the second recess disposed from the third surface of the second optical material towards an opposing fourth surface of the second optical material, the second recess having a depth dimension less than the thickness of the second optical material, and the second recess having a second partially reflective surface.

29. (New) The system of claim 28 wherein the fourth surface of the second optical material is reflective.

30. (New) The system of claim 28 wherein the fourth surface of the second optical material is partially reflective.